

In operation 606, services are executed to acquire information from users utilizing the network. As an option, only a single user may be allowed to execute a service at a time. Still yet, tasks are performed to populate the document with the information gathered by the execution of the services. See operation 608.

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Optionally, contracts may exist which are associated with the various steps of the activity. The completion of the steps may thus be enforced utilizing the contracts.

10 The present invention has three sequential business goals: (1) deploy a supply chain management application for the retail apparel industry, (2) add new features to this application on a continuous basis, and (3) extend this application to support supply chain management in other design-to-order industries. Rapidly accomplishing each goal is a key factor in the success of the present invention. Accordingly, an application meta-model has been developed that supports this time to market 15 requirement in the following ways:

- Rapidly implement application features based strictly on use-cases and data models.
- Factor logical application functionality in parallel with implementation of features.
- 20• Partition physical application components in parallel with implementation of features.
- Specify a common application infrastructure for the entire set of features.
- In the future, enable the generation of application features based on use-cases and data models.

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30 The meta-model specifies a template for implementing application features. It is more than merely a guideline. It provides the context for unambiguous implementation based on specifications. However, it is acknowledged that complete coverage of all possible features is unlikely, thus it is expected that some implementation details beyond those derived from the meta-model.

B2B collaboration requires workflow management. Traditional workflow provides a simple and flexible set of abstractions. Each business process has a

network of steps with a single start step and a single end step. With the exception of the start and end step, the steps within a workflow are of the same type. They may connect to any other step and may produce any type of output.

5 While flexible, traditional workflow does not provide much structure. Therefore, implementing traditional workflow systems consumes a great deal of time. It is believed that, by imposing additional constraints on the workflow used to express B2B collaborations, it can greatly reduce the time required to change existing workflows or implement new ones. In the meta-model, the following three
10 abstractions are utilized:

- **Activities.** Participants in a B2B collaboration conduct an activity, such as *sourcing production*, to perform an economic exchange. An activity is isomorphic to the traditional workflow concept of a process, consisting of
15 many steps. But in this case, the output of a given step is a business document that becomes part of the input to the subsequent step. These business documents flow among the parties to the exchange, making activities the fundamental units of collaboration in the meta-model. As an activity proceeds, the completed business documents represent the accumulated
20 business state. When an activity reaches its final state, these business documents comprise a complete audit trail of the collaboration.
- **Services.** A participant in a B2B collaboration utilizes a service, such as *Respond to RFQ*, to create a business document within the context of an
25 activity. A service is a specialized sub-process within an activity. Services typically occur sequentially within an activity, with some services being optional. The specialization constraint on a service is that only a single participant can utilize a given instance of a service. The goal of a service is to acquire the information from users representing a participant in order to
30 construct the prescribed business document. A service has transactional state; it is either committed or it is not. Once a participant finishes utilizing a service, he commits the business document. The system managing the activity

then publishes this document to other participants who then utilize another service to create the next business document defined in the activity.

- **Tasks.** A participant in a B2B collaboration executes a task, such as *Select Material*, to provide a logical unit of information necessary to populate a business document. A task is a step within a service. Therefore, users representing a single participant execute all tasks within the same instance of a service. Tasks converge to a single end-task. A task has conversational state; until the participant commits the entire service, the state of each task may change. Once a user representing a participant completes a task, the system managing the service moves him to the next task. The accumulated state of all the tasks within an instance of a service provide the information necessary to populate the prescribed business document.

The meta-model offers a number of advantages over both traditional workflow and three-tier system architectures. First, the contracts between activity steps are all of the same type and easy to enforce. They are business documents represented as XML document types; validating the XML document with an off-the-shelf parser enforces the contract. Second, there are built-in checks and balances in the data modeling. User task analysis provides one model of the information necessary to populate a business document, while business process analysis provides a second model of what a business document contains. Finally, the meta-model provides another dimension of application partitioning beyond presentation layer, business logic layer, and data processing layer. The activity-service differentiation makes it possible to distribute complete vertical slices of functionality based on the types of participants that access a given node.

Figure 6B illustrates a supply chain workflow topology 650 in accordance with one embodiment of the present invention. As shown, a plurality of service centers 652, i.e. brand service centers, partner service centers, regional service centers, etc., are interfaced with a plurality of systems 654, i.e. brand systems, partner systems, etc., and brand users 656. A global activity center 658 works to manage the service

centers **652**. It should be noted that the various service centers may include service engines, an activity router, etc.

Figure **7** illustrates a table **700** that summarizes the properties of the meta-model's workflow abstractions. As shown, actions, outputs, state types, and examples are provided for various abstraction levels, i.e. activity, service, and task.

Figure **8** illustrates workflow processing **800** across the three levels of abstraction. As shown, a plurality of services **802** are shown under a single activity **804**. Such services **802** each include a plurality of tasks **806** which are executed. A document **808** is used to track progress between the services **802** of the activity **804**.

One of the most difficult and error-prone facets of developing large-scale workflow systems is specifying how to derive the outputs of a given step from its inputs. The difficulty arises out of the fact that, in traditional workflow, the inputs and outputs may be anything. Therefore, in the meta-model, the types of inputs and outputs have been severely limited. If one can achieve sufficient generality to represent a wide variety of B2B collaborations with a small number of input and output types, such a user can rapidly implement high quality collaboration applications. Because two levels of process steps are utilized, activities and services, one may have data abstractions for each.

Business Documents

Figure **8a** illustrates the manner in which business documents **810** are constructed in accordance with one embodiment of the present invention. As shown, business documents **810** are generated utilizing activity logic **812** having a variety of input. For example, such input may include a business document **814** from a previous service, a context **816** in which the business document **810** is being generated, and/or a state **818** of a final task associated with the service.

Business documents are the data abstraction for the activity layer. All service inputs and outputs are business documents. A business document is a type of XML

document. Through business process modeling, the requirements of a business document are analyzed for a given activity step and construct a corresponding XML schema. Because business documents represent an artifact that may cross participant boundaries, business experts serve as the arbiter of what comprises an appropriate business document rather than users in general.

The output of business process modeling may be a series of XML document types, one for each service in the activity. At an abstract level, a service implements the transition from one document type to another. As set forth in Figure 8a, one can postulate that a given service may derive the contents of its output document from data in the following sources:

- **Previous Business Document.** Both the input to and the output from a service are business documents. Therefore, it is likely that some of the data in the output document may be derived from the input document. For example, the *Ship To* element of a *Quote* document would be populated directly from the *Ship To* element in the corresponding *RFQ* document.
- **Context.** No collaboration occurs in isolation. There is always some context. One proposal is to explicitly take this context into account. Context includes preferences specified by the participant utilizing the service, such as always to request payment terms of net 60 days. Context also includes, implicit or conventional behavior such as automatically defaulting to a variety of sizes for certain types of apparel orders. Finally, context may include exogenous parameters such as time.
- **Tasks.** The accumulated user interaction from all tasks within a service clearly provides most of the interesting data for populating a business document. In fact, many of the acquired elements may probably transfer directly to the business document. Therefore, the next section further expands the details of acquired data.

In many cases, the elements of the output document may come directly from one of these sources. But there may be some transformation of the source information before it goes into the output document. There may even be complex derivation functions where several pieces of source information yield a single output element. In the first 5 version of the system, it is proposed to use the concept of a derivation function as a means to document service implementation requirements. However, in the future, one could actually generate the implementation from a high-level derivation grammar. Figure 8b illustrates a document category overview, in accordance with one embodiment of the present invention.

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User Interaction

15 Figure 9 illustrates a scheme 900 for deriving screens from tasks. As shown, various screens 902 may be used to represent certain combination of tasks 904 which are being executed.

20 User interaction is the data abstraction for the service layer. All task inputs and outputs are user interactions. A user interaction is the capture of user input based on presented information. Through user task modeling, the requirements of a user interaction are analyzed for a given service step and construct a corresponding interaction type. Because user interactions are specific to the type of user that represents a type of participant that utilizes a type of service, users serve as the arbiter of what comprises an appropriate user interaction.

25 A service's tasks provide the user interaction necessary to feed the derivation function for the service. Therefore, there are two ways to look at its task model. The first is a backward chain from the required inputs. Starting from these inputs, one can proceed backwards to the user interaction required to generate them. Then one can proceed backward for each user interaction if they require prior user interactions. One can 30 perform this process until he arrives at user interactions for which the user is prepared at the very beginning of a service. In practice, one may probably eschew this top-down model in favor of bottom-up user task modeling. However, constructing this backward chain after the fact serves two useful purposes. First, it validates the user

task model. Second, it provides some guidance in the sequencing of user interface screens. If one assumes the goal of a screen is to acquire a coherent unit of input, they know that the screen may logically include the information necessary for the user to provide the input. So the last screen may provide the user a choice as well as the 5 information from the previous tasks. Chaining backward, one can construct a pro forma screen sequence, as shown in Figure 9.

Enabling the user interaction specified by each task may require a number of 10 interactive elements. User task modeling to date has revealed six fundamental types of interactive elements. Each of these elements is an abstraction with multiple 15 possible interface representations. Moreover, the underlying data behind each element type may require a database representation as well. The six elements are:

- **Insert.** [Placeholder]
- **Overwrite.** [Placeholder]
- **Delete.** [Placeholder]
- **List Scroll.** [Placeholder]
- **List Filter.** [Placeholder]
- **Alert.** [Placeholder]

20 Limiting the user interfaces to representations of these basic element types has a very important benefit. Because of the use of the model-view-Controller pattern for user interfaces, knowing the abstract types of user interface elements enables one to use a common controller implementation and common model base classes. By deciding on database typing conventions for each abstract type, one can also build the database 25 view base classes. If one can create successful interfaces using this paradigm, one could even move to automatic generation of service infrastructure. The only development task would be choosing the interface representation and laying out the resulting widgets.

30 Figure 10 illustrates a workflow model 1000 in accordance with one embodiment of the present invention. As shown, various services and activities 1002 may be carried out by different service centers 1004. Such service centers were set forth in detail hereinabove during reference to Figure 6b.

Figure 11 illustrates a primary message flow 1100 among the various components of the present invention. As shown, information is distributed among a collaboration manager node 1102, a presentation manager initiate module 1104, a conversation manager initiate module 1106, a collaboration manager hub 1108, a conversation manager generate module 1110, a presentation manager respond module 1112, a conversation manager complete module 1114, and a presentation manager complete module 1116, the details of which will be set forth in greater detail during reference to Figures 12-19.

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Figures 12-19 illustrate a collaboration manager hub 1108, collaboration manager node 1102, conversation manager initiate module 1106, conversation manager generate module 1110, conversation manager complete module 1114, presentation manager initiate module 1104, presentation manager respond module 1112, presentation manager complete module 1116, respectively. As shown, each of the components has certain predetermined input, output and accessible data.

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Figures 20-23 illustrate subsystem architectures associated with the collaboration manager hub 1108, collaboration manager node 1102, conversation manager modules 1106 and 1114, and presentation manager modules 1104 and 1116, respectively.

Security

The following are security measures that may be taken:

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- Hardened Hosts
- Segmented Network
- Link Encryption
- Server-to-Server Certificate Authentication
- 30 •User Password Authentication
- Application-Level Access Control
- Fully-Isolated Database of Record

The following are encryption measures that may be taken:

- Server-to-Server:
 - 128-bit RC4 SSL
- Client-to-Server:
 - 128-bit RC4 SSL (if legal)
 - 64-bit RC4 SSL (otherwise)

5 The following are authentication measures that may be taken:

- Server-to-Server:
 - 10 Mutual Certificates
- Server-to-Client:
 - 10 Server Certificate
 - 10 Client Password (default)
 - 10 Client Certificate (optional)
 - 10 IP Subnet (optional)

The following are user action measures that may be taken:

- Role-Based
- 15 •Restricted Access to Services
 - Can only access services available to assigned role
 - Different service types can provide different levels of access to business document information
 - Managers can access employee work in progress (optional)
- 20 •No Direct Access to Database

The following are host access measures that may be taken:

- No External Administrative Access to Hosts
- App Servers Accessible Only to Web Servers
- 25 •Database Accessible only to App Servers

The explosion of Internet marketplace exchanges signals a transformation in the procurement landscape across every industry. The huge IPO valuations these exchanges have achieved has produced a land grab on the part of the new entrants who are seeking to change the procurement game, and also by the incumbents who

30 are determined to halt disintermediation of their supply chains.

The retail industry is no stranger to these trends -- more than 30 retail exchanges have emerged already across multiple retail segments. Though none are yet open for

business on the Web, the early exchanges include Global Net Xchange, an alliance of Sears Carrefour, Sainsbury's and Metro; World Wide Retail Exchange with 16 equal members including Target, Arhold and CVS among others; and Apparel Buying Network, sponsored by Guess, Inc., to name just a few.

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But despite the early excitement around marketplace exchange valuations and potential for value creation, market watchers are beginning to doubt the ability of these marketplaces to deliver on their initial promise, as shown by the precipitous decline in the stock values of a number of independent marketplace providers (exhibit

10 2). For many, the big question remains - do marketplace exchanges create new value as a result of revolutionizing the way retailers and suppliers do business together?

It is believed there may be only rags for marketplaces that try simply to reduce purchasing costs through aggregation but that the riches may exist for those retailers that through retail exchanges find ways to selectively e-enable and optimize their supply chains. In retail B2B marketplaces, one can expect the winners may be those who focus not just on aggregation opportunities who go beyond to reduce their total cost of ownership and overcome existing "pain points" in the retail supply chain. The simple reduction of cost of goods sold, which has been demonstrated in more commodity-oriented industries, may emerge in the short-term, however the most significant value may be created elsewhere in the medium to long term.

In retail, the challenges of taking B2B marketplace-exchanges from concept to reality are significant and the case is unproven. It is noteworthy that no consortium exchange has yet to launch a single functionality. It is perceived that five key challenges may be overcome to succeed with marketplace exchanges:

1. Achieving the necessary liquidity and scale required to be a credible marketplace.
2. Developing an ownership structure that may induce retail members to participate and invest in exchange development. Retailers may expect ownership for participation as charter members.
303. Accommodating multiple complex buying processes that vary across categories and retail formats. Retail terms by category may change significantly making the development of standards-based exchanges yet more intricate. Answering the

apparently simple question of how a single purchase order may be formatted is in itself a challenge of co-ordination across retailers and categories.

4. Combining existing retailer technologies – be these transactional systems, merchandise planning or replenishment systems - of multiple exchange members with new e-enabling technologies from multiple providers in a standardized format. Once basic transactions have been completed, these transactions may be processed, often on separate application software and systems. Exchanges may need to develop a broad suite of options that can interface with multiple types of legacy retail systems.
5. Managing the privacy requirements and competitive conflicts that exist between exchange members of varying scales. For example, larger members may not be paying to share the advantages of their purchasing scale in basic items with smaller competitors. Yet they may be looking to gain the supply-chain benefits that result from improved collaboration and accelerated supply chain.
- 10
- 15 Despite these challenges, there are a number of reasons to believe that, ultimately, the value of retail B2B marketplaces may be significant and could translate to as much as 5-10% in sales increases, 5-10% of total systems costs reduction and a 20-30% reduction in inventory levels. First, e-enabling trade between suppliers and retailers to enhance chain visibility and streamline activities across the system can have many top line and bottom line benefits. Second, the underlying fundamentals of the business are sound across different categories. Third, retailers of all sizes and formats can gain value from exchanges depending on what key supply chain issues exist. Each of these rationales in turn may be explored.
- 20
- 25 The first reason to believe the underlying fundamentals of the exchange business are sound is that there are many benefits in e-enabling trade between supplier and retailer. These benefits include:
 1. At the simplest level allowing retailers to participate in aggregated purchases where they are subscale – particularly in indirect cost buckets and basic product categories. Imagine the potential that may exist to aggregate health benefits or utility expenses for the US members of the World Wide Retail Exchange with their >1.4 million employees.

2. Giving retailers access to expiring capacity – particularly in perishable categories where grocers, for example, may have the opportunity to make spot special buys to deliver exceptional values to their customers through having improved market transparency. Conversely, retailers may also have the opportunity to use exchanges as efficient off-price dumping grounds for items that have not sold.

5 3. Providing retailers with a more immediate and liquid market to off-load surplus inventory of product.

10 4. Reducing broad based supply chain expenses as a result of both increased transparency and the application of new functionality. Exhibit 3 shows that these potential benefits exist throughout the buying cycle. Ultimately, retailers can expect to:

15 • Improve the management of a dynamic and changing global sourcing strategy as labor rates, import quotas and exchange rates fluctuate across markets.

20 • Reduce markdown rates through shortening manufacturing and supply chain lead times through increased on-line coordination between retailers and suppliers in a world where retailers compete to bring fashion goods to market quickly. A number of the third party marketplaces such as Retail.com and Trade4retail have already developed collaborative design modules for their apparel members. This approach however, may be equally valid in the development of hard-line categories involving design such as patio furniture.

25 • Monitor the flow of goods through the logistics system.

• Reduce actual costs of transactions. In the longer term, it is possible to imagine that retailers may not need to transmit any data to their suppliers and may share data through a hosted and secure website where information is visible to both merchant and supplier.

25 • Link to replenishment systems to improve out-of stock positions more rapidly.

30 Many supply chain benefits may be incurred by net-enabling the design-to-order supply chains like the apparel industry's. Some of these benefits include reducing vendor overhead through a more efficient transaction process, reducing sample costs from improved shared design capabilities, reducing in-store handling from fewer missed shipping dates and the resulting doubling up of in-store sets and product

handling of similar goods and finally, reduced inventory holding cost as a result of reduced safety levels in the system reflecting increased confidence in the availability of product and on its position in the supply chain.

5 Second, the underlying fundamentals of the exchange business are believed to be sound across all types of categories – fashion, basics, perishables and indirects. For fashion items, fashion basics, and in-and-out items that are more difficult to forecast, 10 retailers may look for opportunities to accelerate and streamline their supply chains. In basic categories, such as denim and tees, apparel retailers with more predictable supply chain and forecast requirements may likely seek to maintain their scale 15 benefits and not participate in open marketplaces. However, in these categories it may be possible to look for aggregation opportunities further up the supply chain by developing raw buying consortiums for their suppliers for basic fabrics and raw materials. In perishable categories, suppliers and retailers may be able to trade more 20 swiftly in expiring products. In indirect categories, such as shopping carts, utilities and cleaning services, retailers may seek opportunities to bundle these services and identify new suppliers at reduced costs. This may be particularly true of sub-scale and regional retailers who may likely be able to aggregate their buying. In addition, the emergence of new trading categories, such as grocery end-caps and promotional space in weekly and in-store circulars, are anticipated.

The third reason to believe the underlying fundamentals of the exchange business are sound is that all retailers no matter their scale or format structure can create value 25 from an exchange. While the scale of the retail partner may dictate what value may be created for that retailer, all retailers may want to participate. Smaller retailers may look to piggyback the scale of larger retailers in their category for basic purchasing economies. Medium to large retailers, by contrast, may be more selective in where they look to acquire scale for aggregation purposes and may more actively look to 30 reduce markdown rates and out of stocks by accelerating and streamlining their supply chains through collaborative behavior with their supply base.

In categories in which retailers have scale, retailers may be reluctant to aggregate their buys. These retailers may be searching for pathways to become more nimble and faster to market, especially with fashion and perishable merchandise.

5 Success in creating value may not come easily given the challenges of building exchanges for the retail sector. Maximizing the potential upside may require the application of five basic principles:

1. Retailers may need to move beyond viewing exchanges as centers for transactions and seek to pull all levers associated with the total cost of ownership for procurement, 10 including demand management, collaborative design, inventory management and supply chain visibility. After attempting to pull all levers, retailers can restructure their supply chains where appropriate.
2. Retailers may need to make focused commitments rather than multiple bets. The importance of marketplace liquidity through the aggregation of not just spend but 15 manufacturing capacity and procurement capabilities may require that early entrants drive success through focus. Retailers may likely find it difficult to fragment their buy across categories given tolling fees associated with conducting trade through multiple exchanges.
3. Retailers may need to actively involve themselves in the development of 20 electronic standards development for their retail segment, synchronizing detailed product, price and promotion information among trading partners. Tracking trade allowances may be a formidable part of developing an effective exchange. In the grocery arena, UCCNet is leading this challenge.
4. Retailers should anticipate that building a successful model may require 25 investment not only in systems, but also in the best technology and merchandise talent available to guide service development.
5. Finally, it may be important to score early wins to maintain credibility and momentum with members and the marketplace. These early wins may be achieved by 30 identifying the components of the supply chain that offer the greatest performance improvement both in the short term and long-term.

The retail procurement landscape is rapidly changing, creating new opportunities for suppliers and retailers to collaborate. Although these opportunities are yet to be

proven, it is believed that significant value may be created as a result of improved supply-chain visibility and effectiveness with the tip of the iceberg emerging through purchase aggregation and surplus auction. First though, a myriad of execution and organizational challenges exist related to the opportunity capture. For retailers,
 5 participation is unavoidable in the continual race to optimize the business, and the key question may be not when but how.

Appendix A is an exemplary portion of an international glossary for an apparel vertical market that can be used to make the internal machine translation engine
 10 accurate for the apparel vertical.

APPENDIX A

1.	@	At (referring to price)
2.	A. & C.P.	Anchors and chains proved
3.	a.a.	Always afloat, after arrival
4.	A.A.D.	Annual aggregate deductible
5.	a.a.r.	Against all risks
6.	AAAA	Always Afloat Always Accessible
7.	AADFI	Association of African Development Finance Institutions
8.	AAEI	American Association of Exporters and Importers
9.	AAIB	Arab-African International Bank
10.	AAPA	the American Association of Port Authorities
11.	AARA	Amsterdam-Antwerpen-Rotterdam Area
12.	AATPO	Association of African Trade Promotion Organizations
13.	AA3311/100	Aiale U.S.A.'s™ for a polyamide/polyester/elastone-double-face fabric. It is breathable, water resistant used for pants and jackets.
14.	3 x 2 stretch rib	DuPont™ constructed of 89% Supplex nylon and 11% Lycra. The design, feel and texture closely match a ribbed T-shirt.
15.	aba	A woven fabric derived from the hair of camels or goats. A traditional sleeveless outer garment that is worn by men in the Middle East.
16.	Abaca	A vegetable leaf fibre derived from the <i>Musa textilis</i> plant that is grown in the Philippines but is also found in Africa, Malaysia, Indonesia and Costa Rica. The fibre is obtained from the outer layer of the leaf and processed by separated mechanically decorticated into lengths varying 3 to 9 feet. Resistant to salt water and used for cordage.
17.	Abaya	(Arabic) rectangular cloak without set-in sleeves
18.	Abba	(Arabic) overcoat of straight cut with elbow-length sleeves
19.	Abrash	The tonal variations in the fibers, usually the result of small-batch dyeing or the use of wool dyed in different batches. As collectors consider this a desirable characteristic, many large manufacturers of carpets and rugs have abrash deliberately inserted in their products.
20.	Abrasion	The effect of garments scrubbing against each other while in the dyebath. It gives the material an aged look. In some processes this is desired (e.g. Pigments), while in others, a great deal of effort goes into minimizing this

		effect.
21.	Abrasion test	A test used to simulate and measure the wear performance of warp and weft yarns. The test determines the ability of a fiber or fabric to withstand wear, rubbing, chafing and other friction forces.
22.	Absorbency	The ability of a fabric to take in moisture. Absorbency is a very important property, which effects many other characteristics such as skin comfort, static build-up, shrinkage, stain removal, water repellency, and wrinkle recovery.
23.	Acanthus	A motif or conventional representation of the leaf of an acanthus plant. Often seen as large and scroll-like in appearance.
24.	Accessories	Items such as shoes, scarves, stockings, purses, jewelry and hats that coordinate and enhance the appearance of the person and the fashion garments.
25.	accuvent	Proprietary non-film laminate from Enterprise Coatings; features controlled air permeability that allows 25 to 30 CFM of wind penetration for high breathability and quicker drying time.
26.	Accele®	DuPont™ for acetate fiber.
27.	Acetate	The generic name for a cellulose base, man made fiber. The first commercial production of acrylic fiber in the United States was in 1924 by the Celanese Corporation.
28.	Acetone soluble cellulose ethanoate	(acetate) when the hydrolysis of primary cellulose ethanoate (acetate) is allowed to proceed until approximately 54% of combined ethanoic (acetate) acid remains in the product, the cellulose acetate is soluble in propanone (acetone) and is sometimes known as acetone-soluble cellulose acetate.
29.	Acetylation	The process of introducing an ethanoyl (acetyl) radical into an organic molecule.
30.	Acid dyes	An anionic dye applied from an acidic or neutral dye bath. It has affinity to fibres containing basic groups.
31.	acrilan	(trademark) used for an acrylic fiber.
32.	acrylic fiber	A fast-drying synthetic textile fiber that is usually manufactured by polymerization of acrylonitrile usually with other monomers. The first commercial production of acrylic fiber in the United States was in 1950 by E.I. du Pont de Nemours & Company, Inc.
33.	Acrylonitrile	A tough rigid plastic. Used for making plastic heels on shoes.
34.	Actif	Tapetex™ for nylon/Lycra fabric used for jacket inserts, shorts and pants.
35.	Activewear	A term that describes fabrics and apparel that have been designed to meet the needs of active people. Some of the materials and treatments include antimicrobial wicking polyolefin, water-resistant, titanium particles for ultraviolet protection, abrasion-resistant fabrics, polyester microfiber, antibacterial, antifungal acrylics, knitted polyester, and thermal fabrics; found in fleece, interlock, jersey, bunting, pique, crepe mesh and ribs.
36.	Adaptations	Designs that have all the major features of a certain original, but are not exact copies.
37.	Adsorption	Refers to the adhesion (like a glue) of a gas or liquid to the surface of a material
38.	Adventure twill	Trademark from Tapetex for 70-denier cationic polyester and 70-denier Supplex nylon for active outdoor apparel.
39.	Aeration	A knitting operation that allows fabrics to breathe, often utilized in pantyhose for cotton crotch panels or cotton soles.
40.	Aerologic	Trademark of Dyersburg's 100-percent microdenier polyester single-sided fleece for windproof, breathable laminates; for outerwear and accessories.
41.	Aerophane	A filmuy transparent fabric often used for oversleeves or modesty inserts.
42.	Aero-spacer dri-lex	Trademark for Faytex's liner fabric for footwear and backpack pads, made of Allied Hydrofil nylon, polyester and monofilament moisture transport fiber.
43.	Aesthetics	Refers to the appearance of the thread in the finished seam that can be affected by contrast stitching, color matching, the sheen of the thread and the size of the thread.
44.	Affinity	The quantitative expression of substantivity. It is the difference between the chemical potential of the dye in its standard state in the fibre and the corresponding chemical -potential in the dyebath.
45.	Afgaline	A plain weave, all purpose dress cloth, constructed using a woolen warp and

		weft, or a worsted warp with a woolen weft.
46.	afghan	A knitted or crocheted blanket or shawl that is designed in strips or squares
47.	Afterwelt	The area of knitted fabric just below the double turned fabric in stockings. It is usually made of the same yarn as the welt and is only one layer in thickness.
48.	Agal	(Arabic) black tasseled cord which is wound around the head.
49.	Agilon®	™ of Derring Milliken Inc. for textured Nylon. Agilon is often used in hosiery and was one of the first stretch yarns used to make panty hose.
50.	Agneline	a black woolen fabric with a very long nap. It is coarse and heavy. When stretched the fibres tighten and become water resistant.
51.	aiguillette	aglet; specifically, a shoulder cord worn by designated military aides [Compare fourragère]
52.	Airbrushing	The blowing of color onto a fabric with a mechanized airbrush.
53.	Air entangled	Threads that have been made from continuous filaments that have been entangled by high-pressure air as they run through an air jet.
54.	Air laying	A method of forming a web (or batt) of staple fibres in which the fibres are dispersed into an air stream and condensed from the air stream on to a permeable cage or conveyor.
55.	Air permeability	The degree to which a fabric, coating or laminate allows air to pass through its construction
56.	Air jet	A device used to bulk filament yarn be means of a pressure jet which throws the filaments together devoid of any order so as to give a looped formation. It is linked with the Taslan Process of E. I. DuPont de Nemours & Co., Inc., Delaware.
57.	Air aplice	A means of joining ends of yarn together using high pressure air. This produces a union not as thick as a weaver's knots a better quality product is produced.
58.	Ajour	An openwork design used in lace or embroidery with the pattern scattered on the ground.
59.	alb	a full-length white linen ecclesiastical vestment with long sleeves that is gathered at the waist with a cincture
60.	A la guillotine	A gown made entirely of scarlet fabric
61.	Albatross	A soft lightweight fabric in plain weave, used in sheer dresses, blouses and children's wear. The texture is fleecy and slightly napped.
62.	Algerian eye stitch	Algerian eye stitch also goes by the names of Star stitch and Star eyelet stitch. This stitch is often found on canvas work, pulled work and forms of counted thread work. Worked on even weave fabric, it is made up of stitches arranged in a square.
63.	a-line	Triangular shaped skirt that is wider at the hem than at the waistband
64.	AATT	(American Association for Textile Technology, Inc.) A national technical society, whose members are qualified textile technologists engaged in development work, research and testing in the fields of yarns, fibers, fabrics and finishes.
65.	AATCC	(American Association of Textile Chemists and Colorists) A nationwide scientific body with active sections in various parts of the country, whose members are chemists and others active in the dyeing, finishing and other chemical phases of the industry. AATCC develops standards, test methods and instruments for evaluating fabrics in the wet processing area of the industry.
66.	Albert cloth	A cloth that has a double layer of wool and is reversible. Faces and backs may vary in colour and pattern. Provides additional warmth and body. Used for outerwraps.
67.	ASTM	(American Society if Testing and Materials) An organization which sets up standard methods of tests for textile and other merchandise.
68.	ATMI	(American Textile Manufacturers Institute) Central trade association for the fabric manufacturing industry. Serves as liaison between industry and government. Compiles statistics on operations, imports, manufacturing and technology.
69.	alençon	an elegant needlepoint lace.
70.	Alizarin dye	A vegetable dye originally obtained from the madder root. Used on cotton, particularly in madder prints. It is now produced synthetically.

71.	Alginate	First produced from seaweed in 1940. It is a product of a neutralizing reaction between alginic acid and caustic soda. It is non-flammable. When combined with other fibres, it takes on a sheer appearance. Used for garnishing, camouflage and netting.
72.	Alkali-cellulose	The product of the interaction of strong sodium hydroxide with purified cellulose.
73.	allover	A printed, embroidered, or lace fabric with a design covering most of the surface such as a polka dot or foulard.
74.	aloha	Shirt; a loose brightly colored Hawaiian sport shirt.
75.	alpaca	True alpaca is a hair fiber taken from the Alpaca animal, a member of the llama family of the South American Andes Mountains. The fiber contains much luster and resembles mohair. Also imitated in wool, wool and alpaca, rayon, mohair and rayon or cotton and a cotton warp and alpaca filling also synthetics - e.g. Orion. It is a fine, strong and durable silk-like, soft, lightweight and warm material. True alpaca is expensive so it is often combined with other fibres or imitated by other fibres - e.g. orlon. If guard hairs are used it is inclined to be boardy
76.	Alpargata	A type of sandal made from woven cord
77.	Alpha	A polyolefin fiber made by Amoco Fabric and Fibers Company, used for thermal insulation in gloves, boots, jackets, hats and other winter/sports apparel. Blended with cotton, Alpha turns denim into a high performance fabric for rugged, all weather activities.
78.	Alta micro	Collection of high performance fabrics from Summit Knitting Mills with moisture management, soft hand, ease of care. Brushed and sueded finishes; for performance wear.
79.	Alta spun sport	Trademark of Summit Knitting Mills' fabric collection of CoolMax Alta low-pill spun yarn, offering a natural touch, in a variety of jacquard designs with yarn dye styling techniques; for golf and athleisure apparel.
80.	Alternating cross stitch	Cross stitch is one of the oldest stitches in the world and many variations are practiced. It is used mainly on even-weave fabrics, where the threads can be counted. Although the actual construction of cross stitch remains the same, there are different methods of working.
81.	amaranthine	the color of amaranth, i. e., red.
82.	Amazon	Satin weave. Very soft.
83.	amber	A variable color averaging a dark orange yellow.
84.	Americana	A pattern often modeled on native paintings like those of Grandma Moses. American shows rural landscapes and peaceful property. Popular with colonial motifs, American Eagles, etc.
85.	American Upland Cotton	The primary short staple variety grown in the U.S. representing the bulk of the world crop, American Upland fiber runs between 3/4" and 1 1/4" .
86.	amethyst	A variable color averaging a moderate purple.
87.	Amersil	Venture Textile's™ proprietary silicone, fire-retardant coating offers tear-resistance, superior waterproofness and flame retardancy; for tents, sleeping bags, outerwear and activewear.e
88.	AM Microstop	Antimicrobial, wicking polyolefin in a variety of constructions (e.g. with Lycra, from Coville); a performance activewear applications.
89.	Amphoteric	A property which means a chemical has a tendency to be nonionic at an alkalai Ph and becomes more cationic as the Ph lowers to the acid side.
90.	Ammana	Large wound turban worn by Muslim's.
91.	Anaphe	A wild silk from the larvae of the <i>Anaphe</i> moth.
92.	Anadem	(archaic) a wreath for the head, garland.
93.	angora	(Goat / Rabbit) (Goat) a breed of goat that produces long silky hair known as Mohair. The goat is native to Anatolia in the Angora province of Turkey but is raised extensively today in Texas by ranchers. (Rabbit) : Hair from the angora rabbit. Often blended and mixed with wool to lower the price of the finished article or to obtain fancy or novelty effects
94.	Anidex	A generic term for an elastomeric fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least fifty percent by weight

		of one or more esters of amonohydric alcohol and acrylic acid. It gives permanent stretch and recovery to fabrics and resists gas, oxygen , sunlight, chlorine bleaches and oils.
95.	Aniline dye	A term usually applied to any synthetic or organic dye.
96.	Anim	Trademark of Rohm and Haas Company for anidex fiber.
97.	Animal skins	A pattern that represent primal, savage and exotic animals. These date from the early 19 th century, when Napoleon brought back to Paris real hides collected on his expedition to North Africa.
98.	Anionic dye	A dye that dissociates in aqueous solution to give a negatively charged ion.
99.	anklet	a short sock reaching slightly above the ankle
100.	Anso-tex	Trademark by Allied Signal Performance Fibers for a high-tenacity Nylon. It provides high strength and superior abrasion resistance, and dyes and prints bright clean colors for footwear, outerwear, accessories, soft sided luggage, duffle bags, sports bags and webbing.
101.	anorak	[Chiefly British] parka anorak Usually identifying a pullover hooded jacket long enough to cover the hips.
102.	anthrax	A disease known as "woolsorters disease" that can be transmitted through Mohair, Camel's hair, Alpaca, and Cashmere. It localizes in the skin or lungs and sometimes in the intestines. The symptoms are virulent ulcers and high fever. Both men and animals are subject to this infectious disease. The disease is not always fatal and when confined to skin alone, a cure is usually effected.
103.	Antimigrant	A chemical added to the process compounds to stop dye from moving around during processing. (see bleeding)
104.	Antique lace	A heavy lace on a square knotted net with designs darned onto the net; the machine lace is often used for curtains.
105.	Antique satin	A sateen or horizontal sateen drapery fabric with horizontal (weft) slubs which imitate spun shantung silk. It is composed of approximately 60% rayon (the face of yarn fiber) and 40% acetate (the back yarn fiber). Occasionally, the warp and weft yarns are dyed different colors to give an iridescent effect..
106.	Antistatic	The build up of static electricity is a problem with many synthetic fibers. This causes static electricity situations which shocks when touching metal while wearing something that has built-up static electricity. Antistatic finishes are used on fabrics of this type to cut down on or eliminate the problems, one of which, not widely known is static electricity's affinity to dirt.
107.	Antimicrobial	Describes a fiber which is treated to inhibit the growth of a broad spectrum of bacteria, fungi and yeast.
108.	Antron nylon®	(TM DuPont) Trilobal Nylon. <i>Antron</i> combines lustre, strength, and coloration properties and is most commonly used in the panty of some pantyhose styles to give sheen.
109.	Antung	Silk. a Chinese plain weave without slubs from the Antung region of China. Made from wild silk.
110.	Apparel	Clothing.
111.	Apparel contractor	A business that supplies sewing services to the apparel industry.
112.	Apparel jobber	Description of a business that is involved in garment manufacturing that handles all aspects of garment making, including: designing, planning, cutting, selling and shipping. Everything except the actual sewing.
113.	Apron	The canvas or cord which is attached to the cloth and warp beams and which is long enough to reach the shafts. The apron has a wooden bar or metal rod for attaching the warp threads.
114.	Application identifier	A numeric prefix to a UCC/EAN-128 code that defines the encoded data to follow. These are generally used as secondary codes to provide information not included in standard U.P.C. numbering, such as product dates, weights and lot/batch numbers. It may also identify a UCC serial shipping container code.
115.	apparel	Personal attire; clothing, wardrobe.
116.	Apparel jobber	In garment manufacturing, a business that handles all aspects of garment making (designing, planning, cutting, selling and shipping apparel) except for the actual sewing.
117.	Apparel wool	Broad term which embraces all wool except carpet and pulled wools.

118.	Appliquéd	A separate, pre-cut piece of fabric that is decorated (or decorated and then cut), and applied to another piece of fabric, typically a garment. Frequently used to reduce overall embroidery stitch counts, execute reproductions of which embroidery is incapable (such as continuous-tone printing) and decorate substrates difficult to embroider directly.
119.	Appraisal	Subjective measurement of attributes of a line of wool based upon length, texture, fineness, greasiness, obvious vegetable matter or colour.
120.	Appraiser	Person who performs appraisal of wool.
121.	apricot	a variable color averaging a mod orange.
122.	apron	(1).A garment of cloth, plastic, or leather tied around the waist and used to protect clothing or adorn a costume. 2.In looming equipment terms, the canvas or cord which is attached to the cloth and warp beams and which is long enough to reach the shafts.3.The large fold of a Merino ram carried in front of the neck.
123.	aqua	a light greenish blue.
124.	Aquafor	Klingler Textil's micro Tactel creates water-resistant, abrasion resistant fabrics for outerwear and activewear.
125.	Aquaguard	Trademark of Rotofil for waterproof/breathable film for technical outerwear fabrics.
126.	Aquamiracle	Trademark of Tomen for a Technofine back for wicking and Sunpaque face containing titanium particles for ultraviolet protection, even when wet; for activewear.
127.	aquamarine	a pale blue to light greenish blue.
128.	Aquator	Trademark from DuPont for Tactel nylon knit inside, cotton outside; moves moisture away from skin to outside layer for evaporation; for active apparel
129.	Arabesque	Decoration characterized by symmetrical intertwining branches, leaves and other plant forms together with abstract curvilinear shapes.
130.	Aramid	Generic name given by the F.T.C. in 1974 to a class of aromatic polyamide fibers, Trade names of Nomex and Kevlar. Aramid is noted for its high temperature and flame resistance qualities.
131.	Architectural	A pattern/design that usually imparts a sense of a three-dimensional depth to an architectural motif, whether it is or ornamental or not.
132.	arctic	a rubber overshoe reaching to the ankle or above
133.	Arctic fleece	Trademark from Menra Mills for lightweight polyester fleece for active outdoor apparel.
134.	Ardil	A fiber derived from protein in peanuts and made in England. A type of azlon.
135.	argent	The heraldic color silver or white, whiteness.
136.	Argentan lace	A lace similar to alencon, but the designs usually are not outlined with cord and are often larger and bolder.
137.	argyle	A sock knit in an argyle pattern, namely varicolored diamonds on a single background color
138.	armband	a band usually worn around the upper part of a sleeve for identification or in mourning
139.	armlet	a band, as of cloth or metal, worn around the upper arm
140.	armor	defensive covering for the body, especially covering, as of metal, used in combat
141.	Armseye	(See "scye" arm hole of a garment.
142.	armure	Fiber can be of cotton, silk, wool, rayon, synthetics, and blends. Embossing effect used to give a pattern e.g. in drapery or upholstery. A dress fabric having a wavy rib running in the weft direction which is produced by an amure weave. giving a raised effect. Design is often in two colours and raised. The name was derived from original fabric which was woven with a small interlaced design of chain armor and used for military equipment during the Crusades.
143.	Arnel	Trademark of Celanese Corp. for triacetate fiber. (See triacetate)>
144.	Arrowhead	Used to reinforce and accent points of potential wear on clothing, such as the tops of pleats. They are made with satin stitch and are triangular in shape.
145.	Artificial silk	One of the first terms that described rayon.
146.	art linen	Linen. Plain weave. It is woven with even threads that are especially good for embroidery. It is very easy to "draw" the yarns for drawn thread work. Comes

		bleached, or coloured. Has a soft finish. Its uses are all kinds of needlework, lunch cloths and serviettes.
147.	Art serge	A 2-up-2-down woven worsted which is fine in texture, piece-dyed in many suitable colours, and used for draperies, table covers and general decorative purposes.
148.	Asbestos	A mineral fiber that is nonmetallic. Its greatest virtue is that it is nonflammable. It is used in combination with other fibers for theater curtains and in industrial clothing where flameproofing is essential. Also used for ironing board covers and potholders.
149.	ascot	A broad neck scarf, forerunner of the four-in-hand tie. Originally worn with stick pin and wing collar shirt. It is now primarily worn with open neck sport shirt as casual attire. Introduced at Ascot-Heath races in England.
150.	ashen	resembling ashes (as in color).
151.	Askewed or bias	A defect in fabric caused by filling yarns not square with warp yarns on woven fabrics or where courses are not square with wale lines on knits. It can either be major or minor due to the severity of the problem.
152.	Aspirin dots	Popular circular designs, usually positioned in a regular pattern on the fabric, although the placing may also appear random. Dots may be woven, knitted or printed. Sizes usually determine the name of the dots. They are the size of aspirin and often called polka dots.
153.	astrakhan	A curled lustrous pile is the typical feature of this cloth, which imitates the fleece of the stillborn or very young Astrakhan lamb. The effect may be produced by weaving or knitting. It is sometimes made with a mohair warp to add lustre and curl to the surface. Poor grades often have cotton warp or back. The most popular shade is brown.
154.	Astroturf	Trademark of Monsanto Company for its nylon product designed to imitate grass.
155.	Asymmetric	(knots)a type of knot that may be tied to open right or open left, it also gives the pile and inclination to right or left.
156.	Atactic polymer	A linear polymer containing asymmetrically-substituted carbon atoms in the repeating unit of the main chain, a planar projection of whose structure has the same substituents situated randomly to any one side or the other of the main chain (see also isotactic polymer and syndiotactic polymer).
157.	Atelier	A studio or workroom where high-fashion garments are made.
158.	Atmospheric conditions, std.	Since the temperature and relative humidity have an appreciable effect on the physical properties of textiles, it is necessary that the conditions under which samples are tested be rigidly controlled. In standard atmospheric conditions, the moisture equilibrium must be maintained at a standard atmosphere having a relative humidity of 65% (+/- 2%) and at 70 degrees plus/minus (2 degrees) Fahrenheit (21 degrees C +/- 1 degree).
159.	auburn	a moderate brown.
160.	Aubusson	Originally, Aubusson referred to tapestries made in Aubusson, France, that were used as wall hangings. Later, the word was applied to patterned rugs with little or slight rib and no pile.
161.	Aubusson carpet	A term used for carpets made with a round wire and uncut looped pile to distinguish them from cut pile carpets.
162.	Aumoniere	A purse worn hanging from the belt during the 13 th century, usually, a small, drawstring purse.
163.	Austrian shade	A shade made of fabric which is Shirred across the width of the shade. When drawn up, Austrian shades hang in graceful loops of fabric. (see Shirring).
164.	Autoclaving	A process that involves placing bagged greige blanks in a large cylindrical steam chamber that can be hermetically sealed. Once sealed, a vacuum system is utilized to evacuate the air in the chamber. This in turn allows subsequent attainment of steam pressure much higher than possible at atmospheric conditions. The net result is that the undeveloped yarn in the greige leg blanks permanently shrinks and that the knitted stitches are "set".
165.	Avalanche	Trademark from Mile High Textile for a two-and three-ply Supplex treated for waterproof breathability for outerwear and streetwear.

166.	Avalite	Trademark for Mile High Textile's jet-dyed, two ply Supplex with Teflon HT DWR and a hydro-philic film created for a lightweight, waterproof, breathable, windproof outerwear fabric.
167.	Avant-garde	(ah-vahnt-gahrd) new or experimental ideas in fashion designs, styles or use of materials.
168.	Avlin	™ FMC Corporation for polyester. (see polyester).
169.	avocado	a light yellowish green.
170.	Avril	Trademark of FMC Corporation for high-wet modulus rayon.
171.	Awasi	A good carpet combing wool from Mesopotamia.
172.	Awning stripe	Heavy, firm-woven cotton duck or canvas with either varn-dyed printed or painted stripes. Used for awnings and beach umbrellas.
173.	Axminster	Machine-made rug with oriental designs or velvet construction on an Axminster loom.
174.	Azlon	A generic name for manufactured fibers made from regenerated naturally occurring proteins, such as casein, zein, soybean and peanut. It gives a soft feeling when blended with other fibers.
175.	Azoic-dye	(uh-zoh-ik dy) See naphthol dye
176.	azure	the blue color of the clear sky.
177.	babushka	In Russia, a usually triangularly folded kerchief for the head.

d	Draught
D-RAM	Dynamic Random Access Memory
D.A.A.	Documents against acceptance
D.B.	Day Book, Deals and battens (timber trade)
d.b.b.	Deals, battens and boards
D.D.	Damage done
D.D.C.	Damage done in collision
D.D.E.	Direct data entry
d.d.o.	Despatch discharging only
D.F.	Direction finder or Dead Freight
d.l.o.	Dispatch loading only
d.p.r.	Daily pro rata
D.R.C.	Damaged received in collision
D.T.B.A.	Days to be agreed, date to be advised
D.T.I.	Department of Trade and Industry
d.w.	Deadweight (tons of 2,240 lbs.)
D.W.A.T.	Deadweight all told
d.w.c.	Deadweight capacity/ Deadweight for cargo
d.w.t.	Deadweight tonnage
D/A	Deposit account, Days after acceptance, Documents against acceptance,
D/C	Discharge afloat, Deductible average, Disbursement Account
D/d	Deviation clause
D/D	Days after date, Days' date
D/P	Demand Draft, Delivered at Docks, Damage Done
D/s	Documents against payment
D/V	Days after sight
D/W	Dual Valuation
DA	Dock warrant
DAC	Development Assistance
DACON	Development Assistance Committee
DAEs	Data on Consulting Firms
DAF	Dynamic Asian Economies
DANIDA	Delivered At Frontier
DAP	Danish International Development Assistance
DAT	Days All Purposes (Total days for loading and disch.)
Dbk.	Dangerous articles tariff.
DC	Drawback
DCA	Discharge Capacity
dd/s.	Department of Civil Aviation.
DDP	Delivered sound (grain trade)
DDU	Delivered duty paid.
	Delivered duty unpaid.

Def.a/c	Deferred account
DEG	Deutsche Finanzierungsgesellschaft fur Beteiligungen in, EntwicklungsIndern GmbH
DEIP	Dairy Export Incentive Program
dely. and re-dely.	Delivery and re-delivery
DEM	DEMurrage
DEQ	Delivered ex quay/duty paid.
DESP	DESPatch
Det.	Detained
DF	Designated Federal Officer
DFA	Development Fund for Africa
Dft.	Draft
DGR	Dangerous Goods Requirement.
DHDATSBE	Despatch Half Demurrage on All Time Saved Both Ends
DHDWTSBE	Detpatch Half Demurrage on Working Time Saved Both Ends

While the present invention has been described in terms of several preferred embodiments, there are many alterations, permutations, and equivalents that may fall within the scope of this invention. It should also be noted that there are many 5 alternative ways of implementing the methods and apparatuses of the present invention. It is therefore intended that the following appended claims be interpreted as including all such alterations, permutations, and equivalents as fall within the true spirit and scope of the present invention.